Planning Middle Mile

DELIVERING GIGBYTES

PACIFIC DATAPORT

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Middle Mile Concepts

- Speed isn't the issue (GEO Satellite can do over a 1 Gbps with higher speeds coming)
- Last mile is concerned with speed
- Goal is volume (GB), just like an oil pipeline
- Do that with a lot of Mbps
- Must provision enough middle mile to provide volume required

Alaska Plan Economics

Middle Mile Cost/Mbps	$10	$50	$100	$126	$200	$400	$600
Middle Mile Cost/Customer	$5	$25	$49	$62	$99	$198	$296
Net to ISP	$57	$37	$13	0	($37)	($136)	($234)
Annual Subsidy Required	0	0	($4,542,222)	0	$13,235,556	$48,791,111	$84,346,667
Allowable Charge 25x3	$112.00						
Last Mile Expense/Customer	$50.00						
Volume GB/Customer	160						
Capacity Req'd Mbps/Customer	0.5						
Households	30,000						

The Alaska Plan meets the FCC price target at $126/Mbps with no subsidy or additional customer payment needed.

Other State's Economics

Middle Mile Cost/Mbps	$10	$50	$100	$200	$400	$600	$800
Middle Mile Cost/Customer	$14	$71	$142	$284	$568	$852	$1,136
Net to ISP	$48	($9)	($80)	($222)	($506)	($790)	($1,074)
Annual Subsidy Required	0	0	$28,791,111	$79,902,222	$182,124,444	$284,346,667	$386,568,889
Allowable Charge 25x3	$112.00						
Last Mile Expense/Customer	$50.00						
Volume GB/Customer	460						
Capacity Req'd Mbps/Customer	1.4						
Households	30,000						

Providing the average consumer consumption of data in the U.S. is 460 Gb/month, the middle mile price of would need to be $50/Mbps with no subsidy or additional customer payment needed.

Aurora IV GEO Ka HTS Satellite Middle Mile

- Economy of Scale
  - Same price throughout coverage area
  - GEO Satellite Middle Mile $200M Capex <$99/Mbps
- Speed to market
- Breadth of coverage
- Bandwidth pooling
- Dynamic capacity allocation
- Limited permitting
  - Orbital slots
  - US market entry
  - Ground station licensing

LEO Satellite Basics

- Orbits between 350 and 900 KM—multiple shells—multiple inclinations—multiple satellites (300-16,000)
- Total capacity varies widely—driven by gateways, intersatellite links and beam design
- Use Ka/Ku band in some combination
- Worldwide business with worldwide risk

LEO Satellite Players

- One Web—Alaska service Nov 2021 (Middle Mile)
- Telesat Lightspeed—Alaska service 2024 (Middle Mile)
- Starlink—Alaska service 2022 (Direct to Consumer)
- Kuiper—(Alaska service unknown)
- O3B-MEO has been in service for several years. New constellation provides service up to 50N and is a competitor

LEO Satellite Middle Mile

PRO's

- Limited capital investment
- Lower latency
- Time to market
- Breadth of coverage

CON's

- Complex siting
- Point capacity limitation
- Spectrum sharing
- ~$650/Mbps
- Business sustainability

Things to Consider in Middle Mile Programs

- Cost per Mbps
- Breadth of Coverage
- Time to Completion
- Redundancy
- Business Sustainability

Alaska Consumers Value—Speed, Capacity, Price, When—Latency is distant 5th

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Thank you!

For additional information contact:

Tom Brady
PDI Founder & Communications Expert
tbrady@pacificdataport.com